CHAPTER 3

Uses of Computers

3. Uses of Computers

Computers have become pervasive in our lives and it is difficult to imagine our lives without computer and its associated devices. Computers have made our lives easy, simpler, efficient and productive. Computers are being used in almost all fields today like education, medicine, scientific research, governance, transportation, railways, roadways, communication, business, entertainment, home, hospitals etc.

3.1 Use of Computers in Home

Today computers are being used at home for various purposes. Few examples are given below:

- **Homework for school children**: Children use computers to create documents, excel worksheets, power point presentations, internet to complete school assignments and projects.
- **Entertainment**: Computers can be used to watch movies and videos, listen to music, play computer games, watch live streaming videos and doing many other activities meant for entertainment and recreation.
- **Social Media**: People use social media tools to chat with friends, video chat with friends. People use applications like Facebook, Instagram, and Google Plus to share photos and updates with friends.

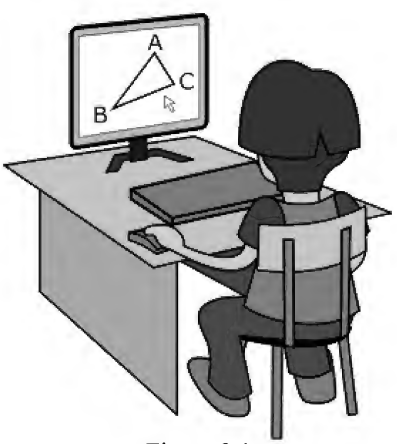

Figure 3.1

- **Knowledge**: People can take help of internet to enhance skills and knowledge. There are educational and informative websites available to read or download content, books, tutorials and relevant documents.

3.2 Use of Computers in Business

In the competitive world, it is very essential to leverage computer automation to increase office

efficiency and productivity. Today computer applications are helping business to lower cost of doing business and increase customer satisfaction. There are many sophisticated industry specific office automation products available in the market that can be used by business.

Figure 3.2

- **Communication**: This is an important aspect of business where computers applications like emails, instant messaging, contact systems, VOIP (Voice over Internet Protocol), video chats are being leveraged for communication among various stakeholders like employees, customers, vendors and management. Companies can use applications such as Outlook to manage business mail, track events and help employees schedule meetings. Skype, Google Hangouts and similar programs give you the ability to hold remote chats, video meetings with people across the globe. These communications platforms also work on smartphones and tablets. Advanced computerized phone systems facilitate automated support and a virtual operator can quickly direct callers to the correct department for faster support.

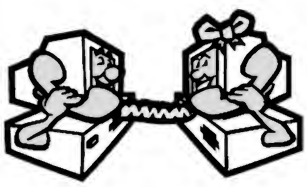

Figure 3.3

- **Sales & Marketing**: Computer applications allow businesses to plan, implement, track and report sales and marketing activities. Websites are created, digital ads and campaigns are launched with the help of software. From creating ad campaigns to tracking campaigns, contacting consumers, collecting and analyzing data, everything is done with specialized tool and software. "**Digital Marketing**" is a buzzword that means targeted, measurable, and interactive marketing of products or services using digital technologies to reach and convert leads into customers and retain them. The key objective is to promote brands, build preference and increase sales through various digital marketing techniques and channels. This mainly uses the Internet as a core promotional medium, in addition to mobile and traditional TV and radio. Few of online channels used are:

  - Affiliate marketing
  - Display advertising
  - Email marketing
  - Search marketing
  - Social Media
  - Social Networking
  - Game adverting
  - Video advertising

Figure 3.4

- **Finance & HR:** Companies typically uses ERP (Enterprise Resource Planning) packages to handle automated Finance and HR functions. These packages takes care of all important functions like financial accounting, general ledger, accounts receivable, accounts payable, taxation, asset accounting, payroll, recruitment, benefits, performance & appraisals etc. HR applications also provide facility to HR managers to generate reports that profile specific employees. In addition to Finance & HR, ERP also comes with Sales, Planning, Inventory, Operations, Administration etc. modules.

- **Education & Training:** Businesses use computers to train & educate employees on processes, technical subjects, business subjects, company policies, standard procedures and safety. Computers are used to educate and train employees leveraging eLearning platform and eContent where employees can plan training themselves and learn on their own pace. These are supported by online assessments and learners are immediately certified.

3.3 Use of Computers in Education

Computers have completely transformed education sector and has opened many avenues for imparting education.

Figure 3.5

- **Smart Classes**: Today traditional classrooms are being converted to modern smart classes. Teachers are using interactive media, images, videos, animations, presentations, simulated learning and smart content to teach students. This helps students understand the concepts and retain the knowledge for a long time. Additionally school ERPs are used to track activities and performance of teachers and students, generate automated score cards and analyze performance at different levels and help in school administration activities.

- **Online Education**: In addition to strengthening traditional education system, computers are helping in creating a new education paradigm "**Online Education"** of pursuing educational certificate, diploma and degree courses. Students can use online mode to pursue a course, degree or training sitting at home with the help of a computer and internet connection. Online education system offers several benefits to the students which they can't avail in traditional education system. This is the reason why millions of people are following online education today and this count is increasing day by day.

- **Digital Library:** School books and contents are digitized and provided to students in eBook (soft copy) form. Magazines, Journals, brochures and articles have become online making it convenient for students to access it anywhere, anytime over the internet. Libraries

are being automated for maintaining issuing and return records and list of all articles in the library.

- **Research / Projects**: Computers help students their project and research works. Today most of the content, data and knowledge are available online hence it has become convenient for students to pursue their research and project works with ease and get ample amount of information for the same over the internet.

3.4 Use of Computers in Healthcare

Figure 3.6

Computers have become an integral part to provide efficient, effective, accountable and transparent health care services.

Hospital Management: Industry specific and specialized software and ERP (Enterprise Resource Planning) packages are leveraged to automate hospital administration and operational activities. The software includes functionalities like online appointments, patient life cycle tracking, patient discharge, patient history, patient monitoring and other activities related to Hospital operations and administration.

Medical Labs: Running tests (blood, urine, tissues, fluids etc.) have become automated to improve accuracy and sanctity of medical tests. There are automated machines available that can execute medical test faster with accuracy at mass level. Now there are instruments available that can help measure and monitor health at home, for example there are digital blood pressure and diabetes monitoring instruments available in the market that one can conveniently use to track health.

Figure 3.7

Surgery: Advanced machines have been designed with help from computers for minimally invasive surgeries. These surgeries cut a small incision, and then place a small surgical tool with an attached camera inside the patient's body. This makes it less likely that a patient will suffer complications from a larger surgical wound, and it helps minimize damage done to the body. Most of these minimally invasive tools use computers to drive the tools, and to relay images from inside the patient's body out to the doctors.

Computerized robotics allows doctors to perform surgery on patients without even being in the same room. These computer-controlled surgeries allow doctors to save the lives of patients many miles away which may not have been possible otherwise. Video networking and real-time vital statistics monitoring allow for safe, precise surgeries that are observed by on-staff doctors or students.

Telemedicine is the use of telecommunication and information technologies in order to provide

clinical health care at a distance. It helps eliminate distance barriers and can improve access to medical services that would often not be consistently available in distant rural communities. It is also used to save lives in critical care and emergency situations. Early forms of telemedicine achieved with telephone and radio have been supplemented with video telephony, advanced diagnostic methods supported by distributed client/server applications, and additionally with tele medical devices to support in-home care.

Figure 3.8

Diagnostic: Computers are being broadly utilized in the radiology realm of health care Technology advancements have led to more sophisticated ways of taking X-rays and performing imaging services. Computers allow radiologists and technicians to study and print the final images.

X-rays and CT (Computed Tomography) scans use radiation to produce images of a patient's internal structure to search for abnormalities. X-rays allow for viewing of the internal structure of the patient from one perspective. CT scanning on the other hand uses computer technology to take several X-ray images that are two-dimensional cross-sections and turn them into a multidimensional picture that doctors use to make a diagnosis. These single X-rays are combined using computer programs that precisely reconstruct the internal structure of the patient.

Magnetic Resonance Imagining, more commonly known as MRI, is the process of using powerful magnetic fields to map the patient's internal structure and activity. MRI is used to produce detailed images of soft tissue in the body without using radiation. The bio-electrical activity in the body is detected by the MRI machine and fed to a computer that interprets the structure of the area being scanned and presents a three-dimensional presentation of electrical activity in the region. This allows doctors to search for physical and operational defects in patients without invasive surgery.

3.5 Use of Computers in eGovernance

Today governments worldwide are leveraging computers to create a better eco-system for effective eGovernance. e-Governance is the application of information and communication technology (ICT) for delivering government services, exchange of information communication transactions, integration of various stand-alone systems and services between government to citizens (G2C), government to business (G2B), government to employee (G2E), government to government (G2G) as well as back office processes and interactions within the entire government framework. Through e-governance, government services are offered to citizens in an efficient, accountable, faster and transparent manner.

In recent years due to technological advancements, computerization, internet connectivity availability, central and state governments in India have pushed large number of e-Governance initiatives.

Following few examples demonstrates various eGovernance initiatives in India:

3.5.1 Government to Citizens

- Railways enquiry and reservation system (http://www.irctc.co.in): IRCTC (Indian Railway Catering and Tourism Corporation) is pioneer in eGovernance and has designed and implemented one of the most complex online reservation systems for its passengers. Through IRCTC website, users can plan, book, cancel tickets and get regular updates on SMS and emails.

- Passport Seva Project (http://www.passportindia.gov.in): The Passport Seva Project is transforming passport and related services in India to provide a best-in-class experience to Indian citizens. This is enabling Indian Government to deliver passport services in a reliable, convenient and transparent manner, within defined service levels.

- Aadhar Card (https://uidai.gov.in/): Aadhaar is a unique identification number issued to residents of India by the Unique Identification Authority of India (UIDAI. The UIDAI will maintain a database of residents containing Biometric, demographics and other data. Central and State Governments in India are using Aaadhar to improved citizen services in various departments. To facilitate disbursements of Government entitlements like NREGA, Social Security pension etc. Central or State Government bodies are using Aadhaar based authentication.

- eMitra in Rajasthan (http://emitra.gov.in): e-Mitra is an integrated project to facilitate the urban and the rural masses with maximum possible services related to different state government departments through eMitra Kiosks.

In addition, eGovernance is also being rolled out for citizens in public distribution system (PDS),

Figure 3.9

providing services by local bodies and municipalities, crime and criminal tracking network system (CCTNS), modernizing panchayats and districts, education and healthcare specially in schools, colleges and hospitals, national land records modernization program, digital cloud for every Indian etc.

3.5.2 Government to Business

- eProcurement: Central and many state governments have initiated procurement through eProcurement system. This not only reduces cost and effort for all stakeholders but also provides transparent, efficient and accountable services.

- Ministry of Corporate Affairs: The project aims at providing easy and secure online access to all registry related services provided by the Union Ministry of Corporate Affairs to corporates and other stakeholders at any time and in a manner that best suits them.

3.6 Online shopping (eCommerce)

Online stores are usually available 24 hours a day hence it makes online shopping very convenient in addition to other advantages. Online shopping is a form of electronic commerce (e-Commerce) which permits consumers to directly buy goods or services from a seller over the Internet using a web browser. Mobile commerce (or m-Commerce) describes purchasing from an online retailer's mobile optimized online site or app. Online customers must have access to the Internet and a valid method of payment in order to complete a transaction.

Consumers find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a shopping search engine. Once a particular product has been found on the website of the seller, most online retailers use shopping cart software to allow the consumer to accumulate multiple items and to adjust quantities, like filling a physical shopping cart or basket in a conventional store. A "checkout" process follows in which payment and delivery information is collected, if necessary. Some stores allow consumers to sign up for a permanent online account so that some or all of this information only needs to be entered once. The consumer often receives an e-mail confirmation once the transaction is complete.

Figure 3.10

Online shopping sites generally allow Net Banking, Credit Card, Debit Card and Cash on Delivery (C. O. D.) payment methods.

Some popular online shopping sites are: Amazon, Snapdeal, Flipkart, eBay, PayTM,

Jabong, Myntra, Shopclues, PepperFry, Homeshop18, firstcry etc.

3.7 Internet Banking

Internet banking is an electronic payment system that allows customers of financial institutions like Banks, Insurance Companies, Financial Brokers etc. to conduct financial transactions (e.g. transferring payment to accounts, paying utility bills, paying insurance premium, bank statements etc.) on a website operated by the institution, such as a retail bank, virtual bank, credit union or building society. This is also referred as internet banking (Net Banking), e-banking, virtual banking etc. Almost all banks and financial institutions provide Online Banking facilities to its customers.

To access Internet Banking, a customer will need to register with the financial institutions and receive credentials. These typically include user id, password and other credentials for customer verifications. Today financial institutions use OTP (One Time Password sent on customer's registered mobile number) as one of the additional security credentials to make transactions safe and secure in addition to using a secure website.

Figure 3.11

To access internet banking, a customer will need to access secured website of the financial institutions, provide required credentials and access all required services. Generally these financial institutions send SMS and emails on the transactions carried out by customers.

Generally customers can perform following activities using Internet Banking:

- Viewing account balance
- Viewing recent transactions (mini and full statements) and download statements in multiple formats like excel, PDF etc.
- Services like ordering cheque books, updating profile, viewing cheques etc.
- Funds transfers between the customer's linked accounts
- Paying third parties, including bill payments (see, e.g., BPAY) and third party fund transfers
- Investment (stocks, mutual funds etc.) purchase or sale
- Loan applications and transactions, such as repayments of enrolments
- Credit card applications
- Register utility billers and make bill payments

3.8 Online Booking

Traveling by road by bus or train begins with online booking on the computer. Companies like redbus or Indian Railways have websites that let people plan trips using their services. You can enter the date of departure and return and the destination, and the computer screen will display ticket prices, itineraries and offer the option to book and pay for the trip right online with a credit card.

Today almost all airlines provide online booking of air tickets. They provide end to end facilities right from planning trip to book tickets, book accommodation, routes, transportation, visa, meals and everything that can make travel convenient and enjoyable.

Procedure of Booking E-Ticket on Indian Railway Website:

- Customer should register in the www.irctc.co.in website to book tickets. Registration is free.
- Before registration, customer should go through the "Terms and Conditions" which are available in the website.
- Customer is allowed to register only one user ID with correct details of e-mail, mobile no., etc.
- Full fare tickets including Tatkal, Child tickets and tickets for senior citizens at concessional rate can be booked through the website. E-tickets can be booked for journey between any two stations on the route of the train including originating station and destination.
- When ticket is successfully booked an SMS will be sent to the customer detailing the PNR, ticket status, fare charged etc.

Payment for booking E-tickets on Indian Railway Website:

- Payment can be made by using all Master/Visa /Amex cards.
- Account holders of major banks viz. State Bank of India, PNB, Indian Bank, ICICI, HDFC, etc. can also use Net Banking/ Debit Cards facility for making payments for tickets booked through internet.
- Customers can also use various Cash Cards for making payments.
- Payment can also be made through IMPS (Immediate Payment Service) provided by National Payments Corporation of India.

Today uses of computer are not limited to only few areas but it has become pervasive. It is difficult to imagine any industry or sector not leveraging computers to provide efficient services or increase productivity. Computers are also being used in followings areas:

- Travel Industry and Personal Travel
- Weather Forecasting
- Retail & Supermarkets
- Remote Sensing
- Transportation
- Defense
- Media & Entertainment
- Design & Manufacturing
- Service Industry
- Airlines / Aerospace
- Space Programs
- Gems &Jewelry
- Research / Artificial Intelligence

Multiple Choice Questions

1. Which of the following could be a eGovernance services:

   a. Driving License

   b. Driving a Car

   c. Buying Vegetables

   d. Printing a T-shirt

2. Online Banking is not referred as:

   a. Net Banking

   b. Virtual Banking

   c. Private Banking

   d. e-Banking

3. Which one of the following service is not generally considered as part of online banking:

   a. Ordering a cheque book

   b. Fund transfer

   c. Buying a property

   d. Viewing transactions